

REMARKS/ARGUMENTS

Claims 1-22 are present in this application.

Claims 2, 9 and 11 were rejected under 35 U.S.C. §112, first paragraph. The Office Action contends that the description is inadequate with regard to the “single control switch.” In this context, however, the specification describes in paragraph [0026] that a single control switch effects raising and lowering of the tower boom, and the control system 34 automatically controls tower lift and telescope functions to follow the predetermined path depending on the main boom angle. The control system 34 controls lift and telescope functions of the tower boom 18 and the main boom 24 based on outputs processed from an inclinometer 30 and a rotation sensor 32. See paragraph [0025]. As would be apparent to those of ordinary skill in the art, with this structure, the single control switch serves to activate control of tower lift and telescope functions via the control system 34. Withdrawal of the rejection is respectfully requested.

Claims 1-16, 19 and 22 were rejected under 35 U.S.C. §102(e) as being “clearly anticipated” by U.S. Patent No. 6,543,578 to Merz. This rejection is respectfully traversed.

Initially, Applicants respectfully take issue with the Examiner’s conclusion that the noted claims are “clearly anticipated” by the Merz patent. Presumably, in order to support a rejection as “clear” anticipation, it should be clear from reading the cited patent which portion of the disclosure purportedly meets the features of the claimed invention. The Merz patent, however, discloses multiple embodiments, and such a blanket rejection renders it difficult for the Applicants to construct a suitable response. Applicants respectfully refer the Examiner to 37 C.F.R. §1.104(c)(2), providing that “in rejecting claims for want of novelty or for obviousness, the Examiner must cite the best references at his or her command. When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part

relied on must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified.”

Notwithstanding this lack of specificity in the Office Action, the Merz patent falls short of the subject matter of the claimed invention. Merz merely describes an input device to ease the understanding of the operator with regard to movements of the machine. Merz in fact lacks any discussion of controlling the positions or coordinated movements of booms other than to facilitate activation of the desired input device. Merz thus lacks at least the subject matter wherein pivoting of a tower boom relative to the vehicle base and telescoping of the tower boom are performed simultaneously and independently such that the tower boom nose pin follows one of a plurality of predetermined paths depending on an angle of the main boom. Indeed, nowhere does the Merz patent even remotely disclose positioning and control of a tower boom that is dependent on an angle of a main boom. In fact, the Merz patent describes independent control of boom position by the operator. Such independent control is in direct contrast with the system that controls a boom position based on an angle of another boom. Applicants thus respectfully submit that the rejection of independent claims 1 and 6 is misplaced.

With regard to claim 3, Merz similarly lacks the method step wherein pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are controlled such that the nose pin predetermined path comprises (1) a constant radius equal to a fully retracted length of the tower boom for tower boom angles less than a predetermined angle relative to gravity, and (2) a substantially straight line tangent to the constant radius for tower boom angles greater than the predetermined angle relative to gravity. Merz lacks any teaching or remote suggestion of any control function that is determined according to boom angles relative to gravity. Applicants thus submit that the rejection of claim 3 is also misplaced.

Claim 10 defines a boom lift including, among other things, a control system that controls positioning of the tower boom and the main boom. The control system effects pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom simultaneously and independently such that the tower boom nose pin follows one of a plurality of predetermined paths depending on an angle of the main boom. As discussed above, at least this structure is lacking in the Merz patent, and consequently, Applicants submit that the rejection of claim 10 is also misplaced.

Claim 19 defines a boom lift wherein a boom lift vehicle is without an upright between the tower boom and the main boom, and wherein the control system effects pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom in a manner similar to that discussed above with regard to claim 10. Applicants thus submit that the rejection of claim 19 is also misplaced.

Claim 22 defines a method of controlling a tower boom path in a boom lift vehicle wherein the tower boom is raised and lowered between a fully retracted position and a raised position by pivoting the tower boom relative to the vehicle base and by telescoping the tower boom. The raised position includes any position up to a maximum angle of the tower boom relative to the vehicle base at a maximum boom length. Pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are performed simultaneously such that the tower boom nose pin follows a predetermined path, where the predetermined path is varied based on an angle of the main boom relative to gravity. As discussed above, the Merz patent lacks any structure or method where the path of one boom is varied based on an angle of another boom. Moreover, the Merz patent lacks any reference to boom angle control using angles relative to gravity. Applicants thus respectfully submit that the rejection of claim 22 is also misplaced.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim. Moreover, claims 2, 9 and 11 reference a single control switch for raising and lowering of the tower boom. Although Merz discloses the use of a single handle, the Merz device utilizes multiple switches to enable independent control. Moreover, claim 8 recites that the step of controlling an angle of the main boom relative to the tower boom comprises maintaining the boom angle relative to gravity as measured at (1) the commencement of a tower lift control or (2) the conclusion of a main boom lift command when the main boom is active with a tower lift command. As noted, Merz lacks any reference to any boom angle relative to gravity. Additionally, Merz lacks any disclosure or remote suggestion of main boom angle control that maintains a boom angle as measured at specific instances.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 1-16, 19 and 22 were rejected under 35 U.S.C. §103(a) over Fulton, McCabe et al., Tapper et al., or Shelton in view of Ashworth or Foley. This rejection is respectfully traversed.

The Office Action contends that Fulton, McCabe, Tapper and Shelton “all teach the claimed method and lift with the exception of the pivotally coupled main boom.” Like the previous rejection, however, the Office Action fails to identify what portions of the cited references purportedly meet the features of the claimed invention. As a consequence, it becomes difficult for Applicants to substantively address any misunderstandings or mischaracterizations of the applied references. It is this difficulty that serves as a basis for 37 C.F.R. §1.104(c).

Fulton discloses a “adaptive control man-augmentation system” that controls the movement of a suspended work station. The device includes structure that detects movement of

a directing member relative to certain axes and produces outputs related to such movement to produce movement of a work station. The example described in the specification relates to a fruit picking apparatus where a directing member is connected to the picker's body, and when horizontal movement is required, the picker leans or reaches in the desired direction of movement, resulting in matching directional movement of the platform at a rate proportional to his angle of part positioning. Independent positioning of the various platform support components directly contrast the control system and method of the invention. That is, the Fulton patent lacks at least the claimed subject matter wherein pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are performed simultaneously and independently such that the tower boom nose pin follows one of a plurality of predetermined paths depending on an angle of the main boom. Fulton also lacks the subject matter of independent claims 3, 10, 19 and 22.

The McCabe patent discloses a tower and main boom but lacks a control system or method that controls the positions and coordinated movements of the booms. As such, McCabe similarly lacks the subject matter of the independent claims.

Like the Merz patent, the Tapper patent describes a control system that allows control of multiple independent movement functions. These functions can be operated simultaneously or independently. By enabling independent control, it is clear that the Tapper patent similarly lacks the subject matter of the independent claims.

The Shelton device is fitted with sensors to allow a blasting head to track an external surface of another object. These sensors allow the blasting head to "read" the positions of these objects. Shelton lacks any closed loop control of the boom with respect to any predetermined paths or relative positions of itself. Indeed, the boom disclosed in the Shelton patent is not an

articulated boom and would therefore inherently lack any of the interrelated issues of a multi-boom device.

The Ashworth and Foley patents do not correct the deficiencies noted with regard to Fulton, McCabe, Tapper or Shelton. These patents merely disclose conventional main booms that are pivotally attached to a tower boom. Ashworth replicates a simple single boom design with a jib. Neither patent discloses or suggests a control system or method having any remote similarities to the claimed invention.

With regard to the dependent claims, Applicants submit that these claims are allowable at least by virtue of their dependency on an allowable independent claim. Still additional features of the dependent claims are also lacking in the cited references. The Office Action in fact fails to reference a single teaching in the six prior art patents included in this rejection that disclose or render obvious any feature defined in the dependent claims.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 17 and 20 were rejected under 35 U.S.C. §103(a) over Fulton, McCabe, Tapper or Shelton in view of Ashworth or Foley and Yoshimatsu. Claims 18 and 21 were rejected under 35 U.S.C. §103(a) over Fulton, McCabe, Tapper, Shelton, Ashworth, Foley, Yoshimatsu and Locke. Additionally, claims 17, 18, 20 and 21 were further rejected under 35 U.S.C. §103(a) over Fulton, McCabe, Tapper, Shelton, Ashworth, Foley and Takahashi. Without conceding the contentions in the Office Action, these secondary references do not correct the deficiencies noted above with regard to Fulton, McCabe, Tapper, Shelton, Ashworth and Foley, and Applicants thus respectfully submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim.

Claims 1, 3-8, 10, 12-16, 19 and 22 were rejected under 35 U.S.C. §103(a) over Smith, Jr. '757 in view of Ashworth or Foley. This rejection is respectfully traversed.

The Smith patent was discussed in detail in the Amendment filed June 20, 2006. The arguments set forth therein are hereby incorporated by reference. In response, the Office Action provides that "the fact that [Smith's] tower boom can be telescope simultaneously or independently with the raising and lowering of his tower boom, his tower boom nose can follow a plurality of paths." This statement evidences a clear misunderstanding of the subject matter defined according to the claimed invention. Even assuming the Smith structure includes a tower boom that can be telescoped simultaneously or independently with the raising and lowering of the tower boom, Smith lacks even a remote teaching of the subject matter of independent claims 1 and 19, including controlling the path (along one of the predetermined paths) based on an angle of the main boom. That is, according to this aspect of the present invention, assuming the main boom is set at an angle A, the tower boom nose pin path is controlled in a predetermined manner. This nose pin path would be the same in every instance that the main boom angle is set at angle A. If the main boom is set at a second angle B, the nose pin path may be different, but each instance that the main boom angle is set at angle B, the nose pin path would remain the same. At least this concept is lacking in the Smith patent.

Moreover, the device described in the Smith patent is geometrically dependent, evidenced by the use of only one cylinder to raise and extend the tower. As such, the Smith device is incapable of controlling boom position such that a tower boom nose can follow one of a plurality of different paths based on an angle of a main boom.

Independent claim 3 defines a method wherein pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are performed simultaneously such that the

tower boom nose pin follows a predetermined path, and pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom are controlled such that the nose pin predetermined path comprises (1) a constant radius equal to a fully retracted length of the tower boom for tower boom angles less than a predetermined angle relative to gravity, and (2) a substantially straight line tangent to the constant radius for tower boom angles greater than the predetermined angle relative to gravity. The Smith patent is silent with regard to the sensing of any angles relative to gravity.

Independent claim 6 defines subject matter similar to that of claim 1, and independent claim 10 defines a boom lift vehicle including a control system that effects pivoting of the tower boom relative to the vehicle base and telescoping of the tower boom simultaneously and independently such that the tower boom nose pin follows one of a plurality of predetermined paths depending on an angle of the main boom. As discussed above, this subject matter is lacking in the Smith patent. Independent claim 22 defines related subject matter, reciting that the predetermined path of the tower boom nose pin is varied based on an angle of the main boom relative to gravity.

Like previous rejections, the Office Action includes a blanket statement "Smith teaches the claimed method and lift with the exception of the pivotally coupled main boom." The Office Action, however, does not reference a single teaching in the Smith patent that meets the noted features of the independent claims or the features defined in the dependent claims. Notwithstanding, Applicants submit that the dependent claims are allowable at least by virtue of their dependency on an allowable independent claim.

Reconsideration and withdrawal of the rejection are respectfully requested.

Claims 17 and 20 were rejected under 35 U.S.C. §103(a) over Smith, Ashworth, Foley and Yoshimatsu. Claims 18 and 21 were rejected under 35 U.S.C. §103(a) over Smith, Ashworth, Foley, Yoshimatsu and Rocke. Finally, claims 17, 18, 20 and 21 were rejected under 35 U.S.C. §103(a) over Smith, Ashworth, Foley and Takahashi. As noted above, these additional secondary references do not correct the deficiencies noted with regard to the Smith patent, taken singly or in combination with Ashworth or Foley. As such, Applicants respectfully submit that these dependent claims are allowable at least by virtue of their dependency on an allowable independent claim. Withdrawal of the rejections is requested.

In view of the foregoing remarks, Applicants respectfully submit that the claims are patentable over the art of record and that the application is in condition for allowance. Should the Examiner believe that anything further is desirable in order to place the application in condition for allowance, the Examiner is invited to contact Applicants' undersigned attorney at the telephone number listed below.

Prompt passage to issuance is earnestly solicited.

Respectfully submitted,

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